Flight Software Branch
Code 582

Project Status Review to ISD
February 26, 2004

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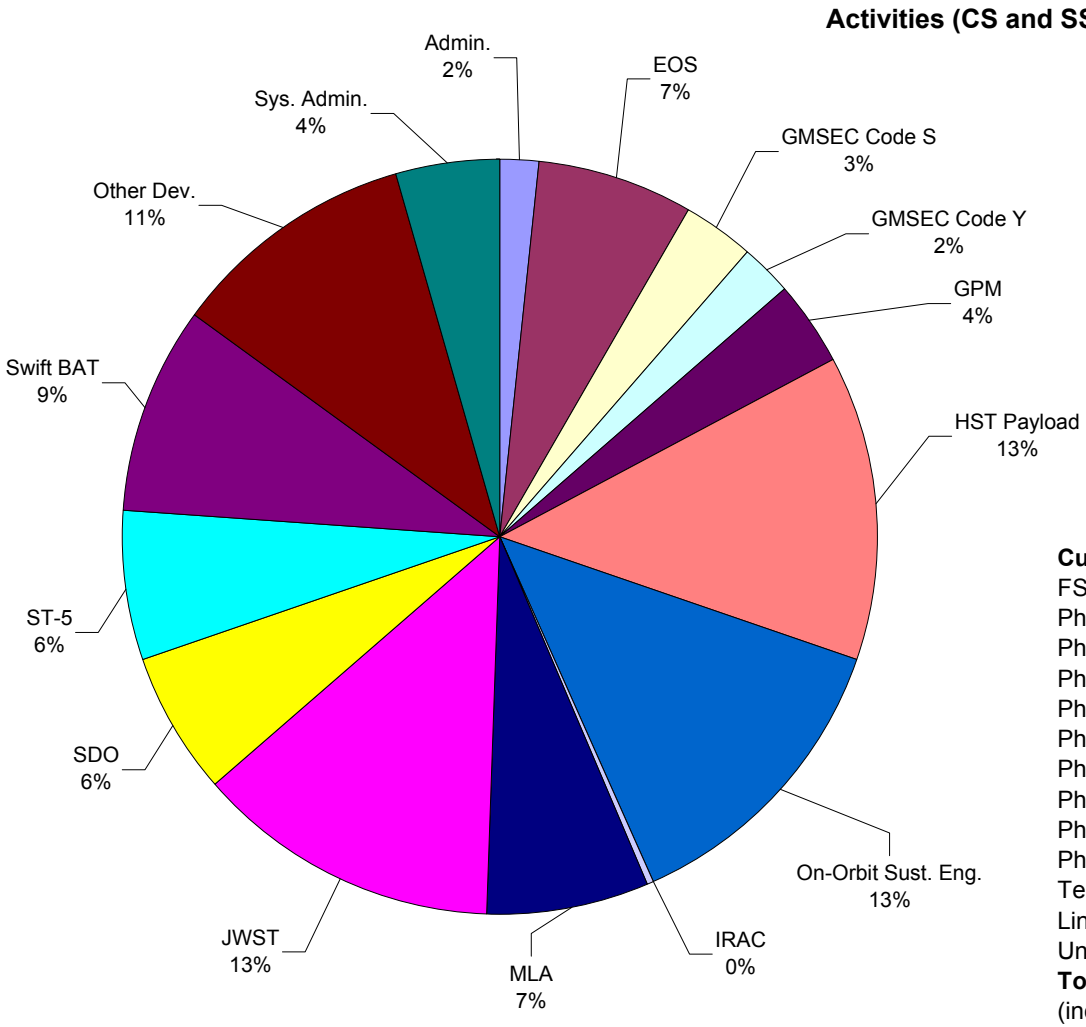
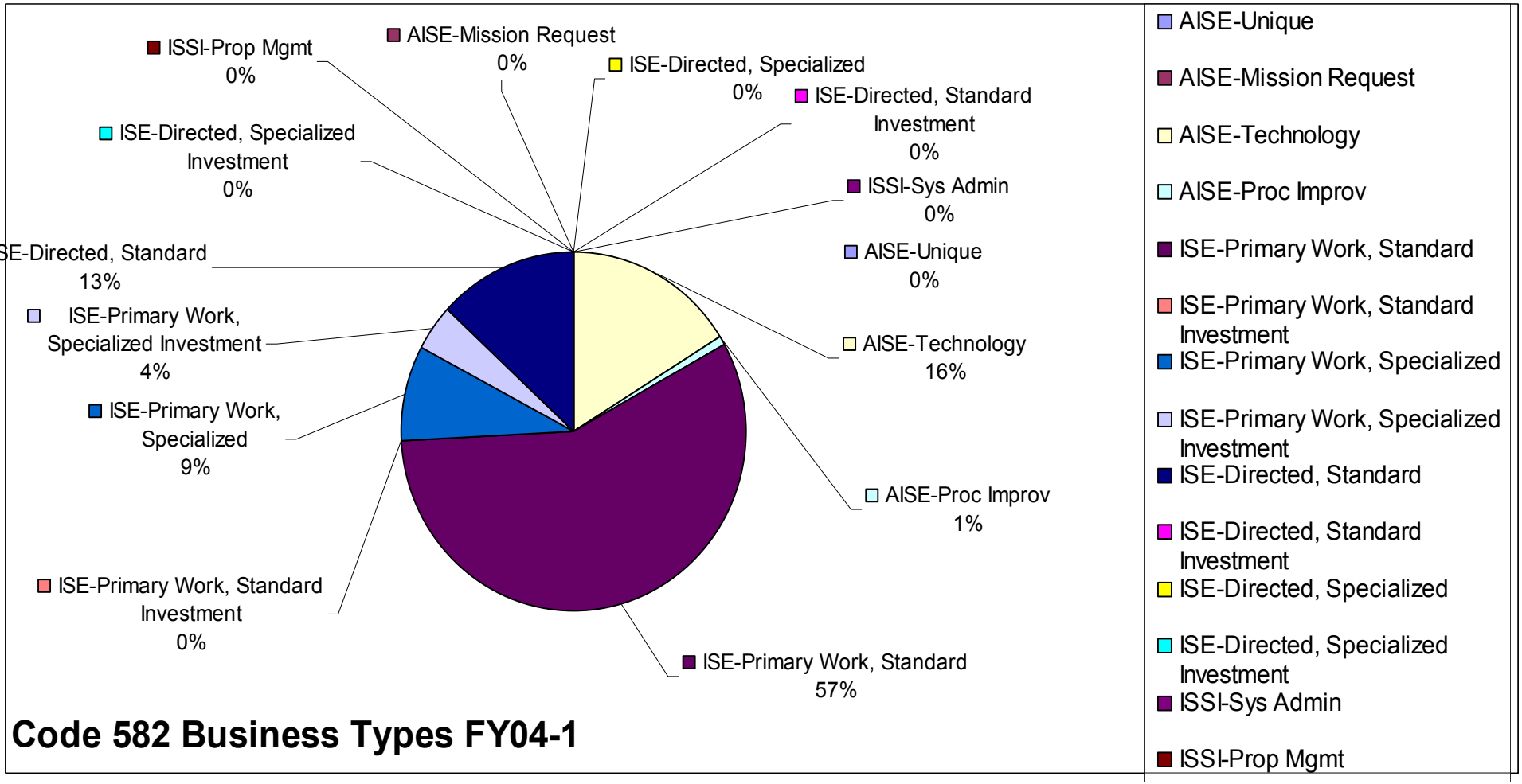
Code 582 Staffing Overview



Current Civil Servant Skills:	
FSW Technology Advances (Sr)	4
Phase A/B Formulation/Design (Sr)	2
Phase C/D/E FSW Systems Manager (Sr)	8
Phase C/D/E Product Development Lead (Sr)	6
Phase C/D/E Development Team Lead (Sr)	3
Phase C/D/E Test Team Lead (Sr)	3
Phase C/D/E Developer (Sr)	3
Phase C/D/E Tester (Sr)	1
Phase C/D/E Developer (Int/Jr)	11
Phase C/D/E Tester (Int/Jr)	3
TestBed Facilities Mgr	1
Line Management/Secretary	4
Unknown/matrixed	1
Total CS Workforce as of September 2003	**50**
(incl. 2 "on-loan" to augment Swift, etc.)	
Total Support Subcontractor Workforce	**89**

Code 582 Staffing Overview



Code 582 Business Types FY04-1

FSW DEVELOPMENTS

	Dec	Jan	Feb	ISD Review	CS	SSC	Status
JWST ISIM	G	G	G	Sep-01	3.0	15.0	Major focus ISIM specific requirements development. ISIM SRR is 3/04. FSW SRR is 4/18/04. C7 Build Test completed & C8 in development.
ST-5	G	G	G	Oct-02	3.5	3.0	Delivered B1.4 6/26/2003. Completed Stage 1 test and delivered FSW test report. Planning Build 1.5 end of Sept. Stage 2 test procedures dry-run near completion.
Swift BAT	G	G	G	Jun-02	7.5	6.5	Build 4.1 Released and Installed at Observatory I&T. A clean-up Release is plan prior to Observatory-level TVAC. There's a shift in focus for us to support Observatory-level I&T shortcomings.
Messenger MLA	G	G	G	Mar-02	0.1	0.0	Instrument Delivered to APL. FSW is in low-level maintenance mode.
SDO	G	G	G		4.0	3.5	Launch date 12/2007 + 8 months (likely slip). Phase C/D started. Began build up of FSW testbeds in B23, 4th floor. Completed design & coding of the SDN Bootstrap Loader. Project PDR scheduled 12/2003, FSW PDR 1/2004
GPM	G	G	G		2.5	2.0	Launch date 2/2009. Phase C/D started. Began development of FSW requirements. Developing prototype of RTOS Abstraction Layer, SDO/GPM Core Executive Services & APIs, and Onboard Ethernet Bus Support software. Project PDR scheduled 7/2004, FSW PDR 9/2004.
FSW Devel. Staff Total					20.6	30.0	

FSW SYSTEMS MANAGEMENT

	Dec	Jan	Feb	ISD Review	CS	SSC	Status
JWST SSM	Y	Y	Y	Jun-01	0	0.3	**FSW SSM Sys Mgr working < 0.25 Project needs more. Term position hire is in works.**
JWST ISIM FSW Mgmt.	G	G	G		0	0	ISIM FSW SIP released Sept. SI Ops Concept Docs released. SI IRD Docs released. Core C&DH User's Guide released.
Swift	Y	Y	G	Nov-01	1	0	Focus is shifting to support of Observatory-level I&T issues with more help from Loiuse B. & Mike B.
SDO	G	G	G		1	0	Reviewing Phase A reports from EVE, SHARP and HMI. S/C Product Plan in development
GPM	G	G	G		0.3	0	Level 3 FSW Subsystem Requirements re-worked
EOS Aura	Y	G	G		0.7	0.75	New data unavailable
NPP	G	G	G	Nov-01	1	0.5	Signed MOA with IV&V (limited to S/C FSW). S/C FSW code reviews currently in progress. Performance of NGST 1394 driver is a concern, joint team to determine resolution approach
GLAST	Y	Y	Y		0	2	**LAT FSW continues to be a major concern.**
ST-7 DRS	G	G	G		0.05	3	THC development with GN&C is going well
HH SET	Y	G	G		0.05	2	THC development. Going well.
Sys. Mgmt. Staff Total					4.1	8.55	

Misc. Project Status Summary

	Dec	Jan	Feb	ISD Review	CS	SSC	Status
IMDC	G	G	G		0.5	0.0	Supported 3 studies: ST-5, WISE, MR2 (this week)
ISAL	Y	G	G		0.5	0.0	Supported 5 studies: EPIC, Micro-Bolometer Thermal System, SAM, Magnus, Cloud Ice. Ann K. joined the team with support from Ray W. & Dan B.
	Total IMDC Missions Supported:					47	(since 4/01)
	Total ISAL Instruments Supported:					12	(since 12/03)
	PROPOSALS & New Work						
	Dec	Jan	Feb	ISD Review	CS	SSC	Status
LISA	G	G	G		0.1	0.0	no activity
001	G	G	G		0.0	0.0	We hope it's history!
RSat/MR2	G	G	G		0.2	0.0	Jane M. & Ray W. started support; very preliminary
OOO	Y	Y	Y		0.0	0.0	No idea of required support!
GEST	Y	Y	Y		0.0	0.0	No idea of required support!
Lunar R	Y	Y	Y		0.0	0.0	No idea of required support!
EPIC	G	G	G		0.2	0.0	Brian Rehm supports
MMS	G	G	G		0.3	0.0	J.P. Swinski supporting; working FSW concept for proposal
SAM	G	Y	Y		0.2	0.0	Dan Berry supporting; Proposal lead under-estimating FSW
Magnus	G	G	G		0.3	0.0	Dan Berry supporting; Very preliminary
				Sub-total	1.3	0.0	

On-orbit FSW Maintenance

HST, UARS, SAMPEX, RXTE, FAST, TRMM, TRACE, SWAS, WIRE, Terra, MAP, Aqua, ICESat GLAS, Cassini CAPS, Cassini CIRS, (Triana), Swift BAT, Aura, TDRSS, MLA, IRAC

- **WIRE - MAGNAV demo has been onboard for 6 months & looks very good. GN&C pleased.**
- **Swift - Competed FSW Maintenance Plan. Working Mission Ops Agreement.**
- **Terra – Competed requirements, design, and implementation of TMON system capacity expansion ???**
- **MLA – Supporting Code 900 & APL I&T. Cleaning up CM. Recent FSW table change. Test-bed fully func. in Bldg 1.**
- **TDRSS – Tom Clement will initiate TDRSS FSW CCB. Local contractor will support TDRSS Project oversight of FSW maintenance by Boeing**

HST Payload

- NSSC BL 8.4 delivered 2/18/04
- ACS CS 4.0 delivery in March, uplink scheduled for 4/20. Contains new algorithm to correctly position filter wheels
- Supporting anomaly review board as needed for the slow turn-on (or failed turn-on) of the STIS HIT1 calibration lamp
- WFC3 CS 3.09 for instrument I&T support due end of Feb. Formal testing completed this week. Loaded on instrument 2/16/04
- Remaining COS & WFC3 activities are focused on close-out due to SM-4 cancellation and preparation for use as GFE to future mission(s)
- New version of Memory Manager tool (version 3.2) released
- VAP version 11 released and installed in ESTIF & VSTIF

Branch Initiatives (CMMI related)

	CS	SSC
	0.2	1.0
Standards CCB: has baselined 27 products. 7 actions opened, 27 closed. 3 DCRs opened, 55 closed.		
Reuse Library: Plan to re-host ST-5 FSW & related products onto Gforce DB and use as reuse prototype for SDO & GPM		
Reuse Library CCB: No activity yet.		

Branch Initiatives (Development)

Core FSW Executive: Development enviroment and debug tools complete for Coldfire processor. Several API requirements defined. Event API being coded. Message service in design. Branch review of concepts and status held 2/8/04		
CFDP: Integfrated in onboard network testbed for 11/03 demo. Currently being upgraded & tuned for flight use.		
Ethernet Device Driver: Complete. Diagnostics Complete.		
	CS	**SSC**
CCSDS/SOIS Support:	**0.1**	**0.1**
Co-chair network working group. Defining standards for onboard networks. Greenbook near complete. Member of messaging service working group.		
GDS/GMSEC	**0.1**	**1.0**
Task started early Feb. Integration of FSW into GDS simulator going well.		
Onboard IP Network Prototype:	**0.3**	**0.9**
Demo'ed in Nov. 03. Currently working reliability and redundancy management designs. Review scheduled for 3/04. Baseline performance analysis near complete		
Plug & Play/GMSEC	**0.6**	**0.6**
Task started mid-January. Demonstrate portability of application APIs across missions.		
RSAT/MR2	**0.7**	**0.0**
Support of Modular, Rapid, Reconfigurable S/C initiative (Code M,R,IRAD)		
QMS Work Shop		
Co-chair 2 sessions, Reuse & Risk Mitigation		
Totals..	**1.8**	**2.6**

Acronyms

ACS	Advance Camera for Surveys (HST)
ATMS	Advance Technology Microwave Sounder (NPP)
AXP	Advanced X-ray Polarimeter
BAT	Burst Alert Telescope (Swift)
Cassini CAPS	Cassini Plasma Spectrometer
Cassini CIRS	Cassini Composite Infrared Spectrometer
IC&DH	ISIM Command & Data Handling (JWST)
CCB	Configuration Control Board
CCR	Configuration Change Request
COS	Cosmic Origins Spectrograph (HST)
CPU	Central Processing Unit
DCR	Discrepancy Change Request
DRS	Disturbance Reduction System (ST-7)
EPIC	???
EOS	Earth Observing System
EVE	EUV Variability Experiment (SDO)
FKSI	Fourier-Kelvin Stellar Interferometer
FQT	Final Qualification Test
GLAS	Geo-science Laser Altimeter System (IceSat)
GLAST	Gamma Ray Large Area Space Telescope
GMSEC	GSFC Mission Services Evolution Center
GN&C	Guidance, Navigation and Control
GPM	Global Precipitation Measurement
HST	Hubble Space Telescope
IMDC	Integrated Mission Design Center
ISAL	Instrument Synthesis and Analysis Lab
ISIM	Integrated Science Instrument Module (JWST)
LANL	Los Alamos National Laboratory
LAT	Large Area Telescope (GLAST)
LISA	Laser Interferometer Space Antenna
WMAP	Wilkinson Microwave Anisotropy Probe
MASIS	Monitor & Science Instrument Simulator (HST)
MLA	Mercury Laser Altimeter (Messenger)
MLS	Microwave Limb Sounder (Aura)
MR2	Modular, Reconfigurable, Rapid
NICMOS	Near Infrared Camera & Multi-Object Spectrometer (HST)
NIRCam	Near InfraRed Camera (JWST)
JWST	James Web Space Telescope
NPP	NPOES Preparatory Project
OOO	Organic Origins Observatory
PSU	Penn State University
SAMPEX	Solar Anomalous & Magnetospheric Particle Explorer
RTEMS	Real-time Executive Multiprocessor System
RTOS	Real-time Operating System
RXTE	Rossi X-ray Timing Explorer
SAM	Science Analysis at Mars
SDO	Solar Dynamics Observatory
SEB	Source Evaluation Board
SI	Science Instrument
SICADS	Science Instrument C&DH Simulator (HST)
SI C&DH	Science Instrument Command & Data Handling (HST)
IRAC	Infrared Array Camera (SIRTF)
RW	Reaction Wheel
SA	Solar Array
SEU	Single Event Upset
SITS	Science Instrument Test System (HST & JWST)
SOIS	Spacecraft Onboard Interfaces
SSM	Support Services Module (HST & JWST)
ST-5	Space Technology 5
ST-7	Space Technology 7
STIS	Space Telescope Imaging Spectrograph (HST)
SWAS	Sub-millimeter Wave Astronomy Satellite
TRACE	Transition Region and Coronal Explorer
TRMM	Tropical Rainfall Measuring Mission
UARS	Upper Atmosphere Research Satellite
WFC3	Wide Field Camera 3 (HST)
WIRE	Wide-Field Infrared Explorer
WISE	Wide-field InfraRed Survey Explorer
XRT	X-ray Telescope (Swift)